

Ace Ethanol, LLC

Stanley, Wisconsin

Control Technology Plan

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1.0 INTRODUCTION

In November 2003, Ace Ethanol, LLC (Ace) signed a consent decree that requires Ace to implement a program of compliance at the corn dry mill ethanol plant it operates in Stanley, Wisconsin. Ace prepared and submits this Control Technology Plan (CTP) as an integral part of the consent decree. This CTP has been reviewed and approved by the US Environmental Protection Agency (USEPA) and the Wisconsin Department of Natural Resources (WDNR) as part of the consent decree.

Ace's CTP includes the following:

- (a). Identification of all units to be controlled;
- (b). Engineering design criteria for all proposed controls capable of meeting the emission levels required by Part V of the Consent Decree;
- (c). Proposed short-term and long-term emission limits and controlled outlet concentrations for each pollutant as appropriate;
- (d). A schedule for expedited installation with specific milestones applicable on a unit-by-unit basis;
- (e). Proposed monitoring parameters for all control equipment and parameter ranges;
- (f). Identification of all units to be emission tested under Paragraph 11 of the Consent Decree and a schedule for initial tests and retest;
- (g). The test methods that will be used to demonstrate compliance with the emissions levels set forth in the Consent Decree; and
- (h). Program for minimization of fugitive dust emissions from facility operations.

2.0 EMISSION UNITS REQUIRING POLLUTION CONTROL EQUIPMENT

The following emission units, fugitive sources, and control equipment have been designated as affected units in the consent decree and have emission limits requiring pollution control technology.

Emission Unit	Unit Description	Control Equipment	Control Description
B50	Boiler #1	NA	NA
P20	Fermenter #1	20	scrubber
P21	Fermenter #2	20	scrubber
P22	Fermenter #3	20	scrubber
P23	Beerwell	20	scrubber
P24	Beer Stripper	21	scrubber
P25	Molecular Sieve System	21	scrubber
P26	Evaporator	21	scrubber
P27	Rectifier	21	scrubber
P28	Side Stripper	21	scrubber
P29	Slurry Tank	21	scrubber
P30	Yeast Propagation	20	scrubber
P32	Fermenter #4	20	scrubber
P40	DDGS Dryer #1	40, 41	Multiclone and RTO
R10	Regenerative Thermal Oxidizer	41	RTO
F01	Truck Traffic	NA	Paved roads
F04	Loading Rack	12	Flare
F05	Valve, Flange, & Seal Fugitives	NA	LDAR

3.0 ENGINEERING DESIGN CRITERIA FOR POLLUTION CONTROL EQUIPMENT

After identifying the affected units that require installation of air pollution control technology, Ace Ethanol conducted a design and engineering review of each unit to select the pollution control technology that would achieve the emission level reductions identified in the consent decree.

Process Description	Control System	Control Technology	Operating Parameters
Fermentation and Beerwell	C20	Packed Bed Scrubber	Exhaust flow rate: 4,000 cfm Water flow rate \geq 30 gal/min.
DDGS Dryer #1 (with low NO _x burner)	C40, C41	Multiclones Regenerative Thermal Oxidizer for VOC, CO and PM/PM ₁₀ control	Exhaust flow rate: 90,000 cfm Residence time: 0.5 seconds Combustion chamber orientation Operating temperature: = 1575 °F Design fuel input rate: 18 MMBtu/hr
Boiler #1	B50	Low NO _x burner	Design fuel input rate: 60 MMBtu/hr
Ethanol Truck Load-out	C12	Flare system	95% VOC combustion, flare operation consistent with 40 CFR 60.18 provisions

4.0 PROPOSED EMISSION LIMITS FROM POLLUTION CONTROL EQUIPMENT

Unless otherwise stated, all controlled emission limitations apply at all times except during periods when the process equipment is not operating or during previously planned startup and shutdown periods, and malfunctions as defined in 40 CFR section 63.2. The provisions of sections NR436.03, NR 439.03, and NR 439.11 Wisconsin Adm. Code are also applicable. These startup and shutdown periods shall not exceed the minimum amount of time necessary for these events, and during these events, Ace shall minimize emissions to the greatest extent practicable. To the extent practical, startup and shutdown of control technology systems will be performed during times when process equipment is also shut down for routine maintenance.

Any deviation from the requirements in 4.0 and/or 4.1 shall be reported in the quarterly reports and as required under other state and federal rules.

Process Equipment	Pollutant	Pollution Control Equipment	Pollutant	Startup/Shutdown Emission Limit	Startup/Shutdown Emission Limit
Fermentation and Beerwell	C20	Packed Bed Wet Scrubber	VOC	95% reduction or <20 ppm if inlet concentration is below 200 ppm; lb/hr limits to be established based on performance testing under the process outline under Paragraph 19 in the Consent Decree.	
			HAPs		12-month rolling sum total facility emission cap of 9.0 TPY for any single HAP and 24.0 TPY for total HAPs.

Process Description	Control Strategy	Control Technology	Pollutant	Control Efficiency	Control Outcome
Boiler #1	B50	Low NO _x Burner	NO _x	0.04 lb NO _x /MMBtu	
Truck Loadout	C12	Flare	VOC	95% reduction	
			HAPs	95% reduction	12-month rolling sum total facility emission cap of 9.0 TPY for any single HAP and 24.0 TPY for total HAPs.
DDGS Dryer #1	C40, C41	Dryer#1 multiclones for PM/PM ₁₀ control Regenerative Thermal Oxidizer for VOC, PM/PM ₁₀ and CO control	CO	90% reduction or emission no higher than 100 ppm	
			NO _x	0.04 lb NO _x /MMBtu (dryer outlet)	

Process Description	Control Device	Control Efficiency	Pollutant	Short-Term Emission Limit	Long-Term Emission Limit
			PM/PM ₁₀	Test and set pursuant to process outlined under paragraph 19 of the Consent Decree	
			VOC	95% reduction or 10 ppm outlet concentration; lb/hr limits to be established based on performance testing under the process outline in paragraph 19 under the Consent Decree.	
			HAPs		12-month rolling sum total facility emission cap of 9.0 TPY for any single HAP and 24.0 TPY for total HAPs.

For all source-wide emission limits during the first 11 months of operation, the facility will maintain the following source-wide limits in Tons Per Year:

	Mo 1	Mo 2	Mo 3	Mo 4	Mo 5	Mo 6	Mo 7	Mo 8	Mo 9	Mo 10	Mo 11
Individual HAP/	1.6/	3.2/	4.0/	4.8/	5.6/	6.4/	7.2/	8.0/	8.2/	8.5/	8.8/
Total HAPs	3.0	6.0	9.0	12	14	16	18	20	21	22	23

5.0 POLLUTION CONTROL EQUIPMENT INSTALLATION SCHEDULE

Regenerative Thermal Oxidizer (with low NOx burner)

Start of operation with dryer system exhaust online	February 23, 2004
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Dryer #1 (with low NOx burner)

Start-up of dryer with low NOx burner	December 31, 2004
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6.0 PROPOSED MONITORING PARAMETERS FOR POLLUTION CONTROL DEVICES

The consent decree requires that monitoring parameters be established for affected pollution control devices. Following startup of a control device described below, Ace agrees to the following monitoring and operating parameters for each of the affected pollution control devices.

Control Device	Control Device Description	Parameter Monitored	Operating Range	Monitoring Frequency
C20	Fermentation Scrubber	Pressure Drop and Water Flow Rate	2 to 12 inches of water column At least 30 gallons water per minute	Continuously and recorded once every eight hours when operating
C41	Regenerative Thermal Oxidizer	Operating temperature	At least 1575 F combustion chamber	Continuously with low temperature alarm
C12	Flare	Flame detection		Continuous during ethanol truck loading
F05	Leak Detection	As stated in 40 CFR Subpart VV	As stated in 40 CFR Subpart VV	As stated in 40 CFR Subpart VV
P40	DDGS Dryer	Syrup Feed	TBD	Once every eight hours
		Beer Feed	TBD	Once every eight hours
		Multiclone Pressure Drop	TBD	Once every eight hours
		Dryer inlet/outlet temperatures	TBD	Once every eight hours

All monitoring data collected above shall be recorded and maintained on-site. Any deviation of monitoring frequency, record keeping and range shall be reported in the quarterly reports and as required under other state and federal rules.

7.0 POLLUTION CONTROL DEVICE PERFORMANCE TEST SCHEDULE AND METHODS

The following schedule and methods will be used to demonstrate compliance with the emission limits contained in Section 4.0 of this Control Technology Plan and the consent decree.

Ace shall conduct the following performance testing pursuant to the schedule under paragraph 22 of the Consent Decree.

Process Description	Unit Control Device	Unit Control Device Description	Pollutants	Proposed Methods
Fermentation Scrubber	C20 /	Packed Bed Scrubber	VOC Inlet and Outlet, Speciated VOCs/HAPs	Method 1, 2, 3A, 4, Method 18 NCASI CI/WP-98.01 and VOC test method as approved by the parties in the Performance Test Plan Protocol.
Boiler #1	B50 S50		NO _x	Method 1, 2, 3B, 4, and 7E
			CO	Method 10
Ethanol Truck Loadout, Flare System	F04/C12	Ethanol truck loadout	Visible Emissions	Flare operation consistent with 40 CFR 60.18
DDGS Dryer #1, Regenerative Thermal Oxidizer	C40	Dryer#1 multiclones for PM/PM ₁₀ control	CO Inlet and Outlet	Method 1, 2, 3B, 4, and 10
	C41	Regenerative Thermal Oxidizer for VOC, PM/PM ₁₀ , and CO control.	NO _x (dryer outlet)	Method 1, 2, 3B, 4, and 7E
			PM/PM ₁₀ Outlet	Method 1, 2, 3B, 4, 5 and 202
			VOC Inlet	Method 1, 2, 3B, 4, 25 (unless the outlet concentration is < 50 ppm, then 25A will be used)
			VOC Outlet, Speciated VOCs/HAPs	Method 1, 2, 3B, 4, Method 18 NCASI CI/WP-98.01 and 25 (unless the outlet concentration is < 50 ppm, then 25A will be used)

8.0 FUGITIVE DUST EMISSION CONTROL PROGRAM

The objectives of the Fugitive Control Program are to prevent and minimize the release of avoidable fugitive emissions as required by the consent decree. Beginning no later than 30 days following lodging of the Consent Decree, Ace will comply with the provisions set forth below.

- Ace will document that all normal traffic routes used for truck and car traffic are paved.

Any deviations shall be reported in quarterly reports unless more frequent reporting is required by state or federal regulations.